

Technical Catalogue

eks



Multi-Scroll Air-Cooled Liquid Chillers

Nominal cooling capacity: 167-582 kW | 50 Hz



eks/BS business

Air cooled water chillers for outdoor installation designed for applications which require high performance, cost reduction and capability to operate in all conditions.

The units are equipped with efficient SCROLL compressors, "V" condensing shape and axial fans having aerofoil section, sickle-shaped blades.



The picture refers to the model: eks - BP / BS/AS 140-4-2



AEROFOIL FANS

Aerofoil section, sickle-shaped blades, with serrated trailing edges and winglets based on bionic insights.
Motor with AC (standard) or EC technology (option).



MAINTENANCE SIMPLICITY

The arrangement of the components has been studied in detail in order to allow any operation of maintenance in the simplest and safest way.



COMPACT FOOTPRINT

The size of the units has been optimized so as to minimize the space occupied, ensuring an easy accessibility to all the components.



MULTIPLE CONFIGURATIONS

The various configurations and the vast number of available accessories make these units virtually suitable for all applications and every kind of installation.

eks/HE high efficiency

Air cooled water chillers for outdoor installation designed to reach the lowest energy consumption and highest efficiency.

The units are equipped with high-efficient SCROLL compressors, “V” condensing shape with increased surface and extremely efficient evaporator with low refrigerant charge and very stable operating performance due to excellent refrigerant distribution.



The picture refers to the model: eks - BS / HE/SL/HR 090-4-2HE



**EUROVENT
"A" Class**

Eurovent Certification certifies the performance ratings of air-conditioning and refrigeration products according to European and international standards. Every model of eks-he range is under "A Class" based on Energy Classification.



**PART-LOAD
EFFICIENCY**

Every refrigerant circuit is equipped with two or three Scroll compressors and during the part-load condition it's possible to reach the maximum efficiency and more capacity control steps.



**EC
FANS**

Electronically commutated axial fans give increased performance for reduced power input. Continuous speed control and outstanding efficiency, even in partial load operation.



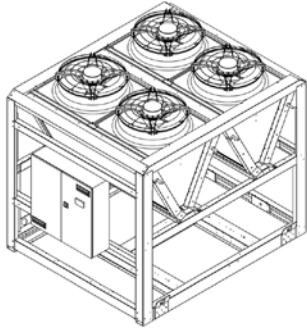
**LATEST
TECHNOLOGY
INSIDE**

- ✓ Electronic Expansion Valve
- ✓ EC fans supplied as standard
- ✓ Microchannel coils

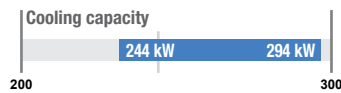
eks range

eks/BS business

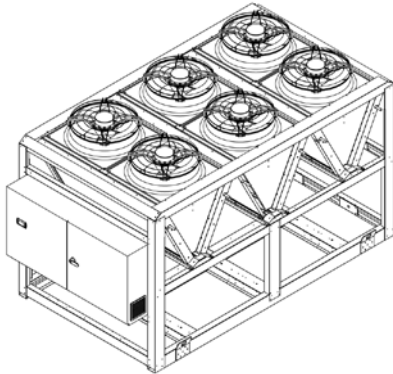
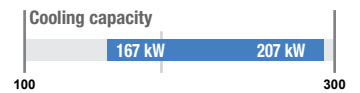
eks/HE high efficiency



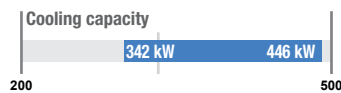
090-3-1 ↔ 120-3-1



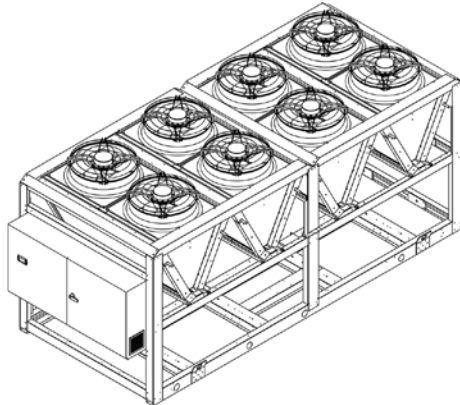
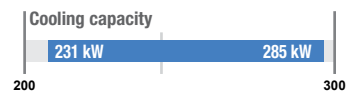
055-2-1HE ↔ 070-2-1HE



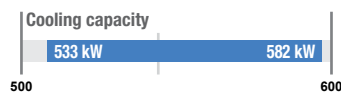
120-4-2 ↔ 180-6-2



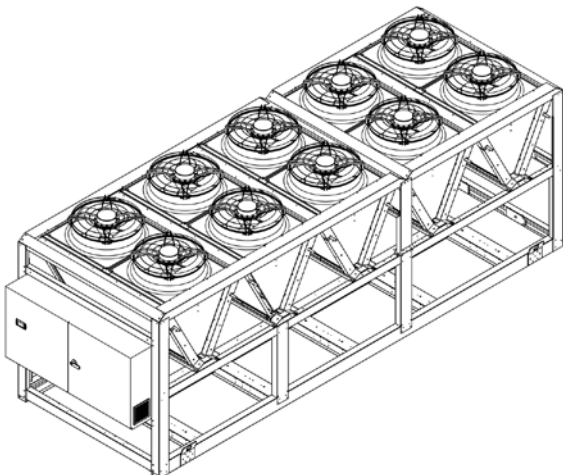
080-4-2HE ↔ 100-4-2HE



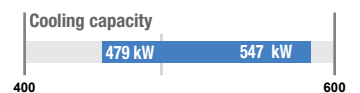
200-6-2 ↔ 240-6-2



110-4-2HE ↔ 140-4-2HE



160-4-2HE ↔ 180-6-2HE



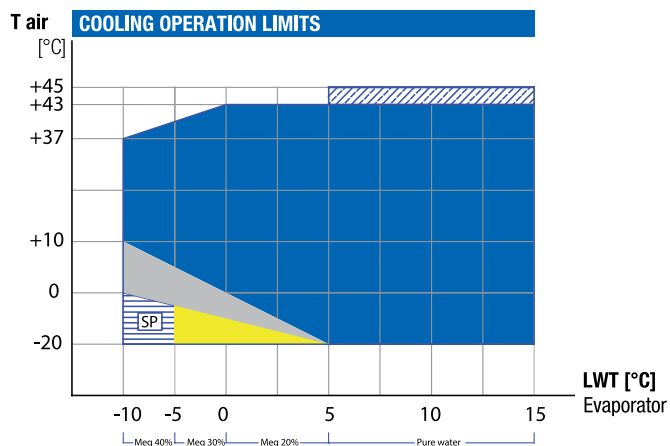
eks operating limits

Number of models: **11** - Number of possible configurations: **1000+**

eks/BS business

- Operating area
- Operating at partial load
- Operating area with modulating fan speed control (option)
- Operating area with EC Fans (option)
- SP - Special configuration available on request

T air: Outdoor air temperature [°C]
 LWT: Evaporator outlet temperature [°C]
 MEG: Mixture of ethylene glycol

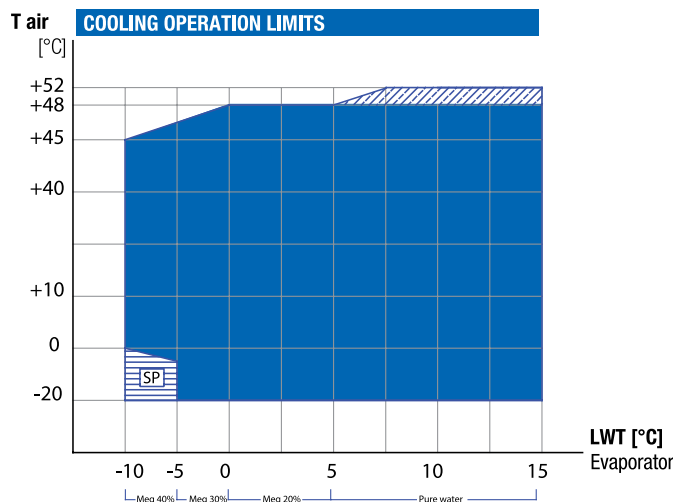


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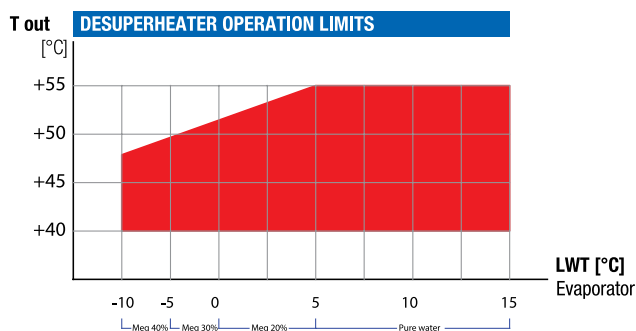
eks/HE high efficiency

- Operating area
- Operating at partial load
- SP - Special configuration available on request

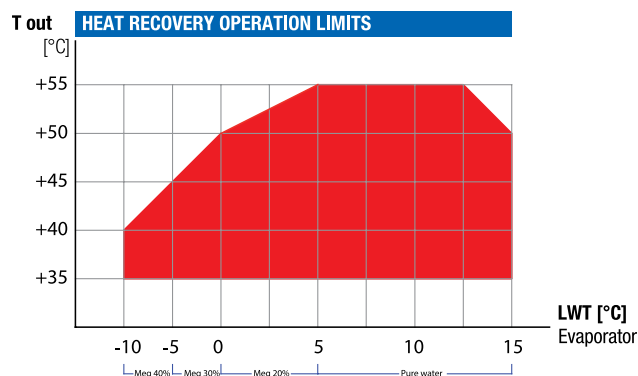
T air: Outdoor air temperature [°C]
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eks/BS business • eks/HE high efficiency



Operating area with Desuperheater
 T air: Outdoor temperature [°C]
 LWT: Evaporator outlet temperature [°C]
 MEG: Mixture of ethylene glycol



Operating area with Heat Recovery
 T air: Outdoor temperature [°C]
 LWT: Evaporator outlet temperature [°C]
 MEG: Mixture of ethylene glycol



Refrigerant
R410A | GWP=2.088



Scroll
Compressor



Shell & Tube
exchanger



Axial
fan



Braze plate
heat exchanger

090-3-1 ↔ 240-6-2

MultiScroll Air-cooled liquid chillers Standard efficiency



Configuration

- B - Base
- I - Integrated

Type

- ST - Standard
- LN - Low Noise
- SL - Super Low Noise

Solution

- AS - Standard equipment
- DS - Desuperheater
- HR - Heat Recovery

Cooling capacity 244 - 582 kW

Structure	Structure specifically designed for outdoor installation. Basement and frame in hot-galvanised shaped sheet steel with a suitable thickness. All parts are polyester-powder painted to assure total weather resistance (RAL 7032 standard colour, others on request).
Compressor	Hermetic scroll compressor complete with motor over-temperature and over-current devices and protection against excessive gas discharge temperature. Fitted on rubber antivibration mounts and complete with oil charge.
Fan	Low speed, axial-flow fans fitted with accident-prevention protective grille; directly coupled motor with built-in thermal cut-out and IP 54 protection degree; aerodynamic housing and wing profile blades increase efficiency and decrease noise level.
Air heat exchanger	Finned coil made with copper pipes and aluminium fins offering a high exchange surface area.
Water heat exchanger	Plate-type Made of AISI 316 steel complete with water differential pressure switch. Shell covered with closed-cell neoprene anti-condensate material. Shell & tubes All extremely efficient with low refrigerant charge and very stable operating performance due to excellent refrigerant distribution, thermally insulated by vapour-proof closed cell.
Electrical board	Switchboard made according to standards IEC 204-1/EN60204-1, complete with contactor and protection for compressor and fans. Main isolator and door interlock safety device.
Control	The microprocessor controls the unit capacity by timing the compressors and checks the operating alarms with the possibility to connect to BMS.
Refrigerant circuit	Filter dryer, moisture-liquid sight glass, electronic expansion valve, HP and LP pressure sensors and safety valve.
Water circuit (Integrated):	Automatic charging cock with gauge, safety valve, expansion tank, water pump(s), water tank

MAIN ACCESSORIES

- Spring vibration isolation
- Modulating fan speed condensing control (phase-cut)
- Soft start
- Compressor suction/discharge intercepting valve
- Remote control panel
- Max and min voltage relay
- Refrigerant gas HP and LP pressure gauges
- Electromechanical flow switch
- Pumping group, 1 pump
- Additional stand-by water pump
- Automatic water filling valve (closed circuit)

► For the complete list of accessories please see pages 18-19

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eks/BS business		090-3-1	100-3-1	110-3-1	120-3-1	120-4-2	140-4-2	160-4-2	180-6-2	200-6-2	220-6-2	240-6-2
Cooling												
Cooling capacity (1) (EN 14511 VALUE)	[kW]	244	262	280	294	342	371	395	446	533	559	582
Compressors power input (1) (total)	[kW]	81,6	90,6	99,8	108,0	104,4	122,8	139,6	174,0	177,4	195,2	213,6
EER	-	2,78	2,71	2,64	2,58	3,02	2,81	2,66	2,44	2,82	2,70	2,58
ESEER	-	4,18	4,00	3,96	3,77	4,06	3,97	3,82	4,00	4,09	3,98	3,79
EUROVENT classification	-	D	D	E	E	C	D	D	E	D	D	E
Desuperheater (option)												
Heating capacity (2)	[kW]	66	71	74	81	89	99	107	124	142	151	158
Exchanger water flow (2)	[m ³ /h]	11,4	12,1	12,7	13,9	15,3	17,0	18,3	21,3	24,4	26,0	27,2
Exchanger pressure drop (water side) - Plates	[kPa]	21	23	25	24	26	22	24	28	23	20	22
Total Heat Recovery (option)												
Heating capacity (2)	[kW]	319	348	371	394	434	484	525	607	695	738	782
Exchanger water flow (2)	[m ³ /h]	54,9	59,9	63,8	67,7	74,6	83,2	90,3	104,5	119,5	126,9	134,5
Exchanger pressure drop (water side) - Plates	[kPa]	42	45	40	48	46	42	45	48	40	39	43
Refrigerant circuit												
Refrigerant	-	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Number of refrigerant circuits	[nr]	1	1	1	1	2	2	2	2	2	2	2
Compressor type	-	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL
Compressors quantity	-	3	3	3	3	4	4	4	6	6	6	6
Fans quantity / type	[-]	4/axial (AC)	4/axial (AC)	4/axial (AC)	4/axial (AC)	6/axial (AC)	6/axial (AC)	6/axial (AC)	6/axial (AC)	8/axial (AC)	8/axial (AC)	8/axial (AC)
Total air flow	[m ³ /h]	86.000	86.000	86.000	86.000	129.000	129.000	129.000	129.000	172.000	172.000	172.000
Evaporator water flow (1)	[m ³ /h]	39,6	42,6	45,4	47,7	55,5	60,2	64,1	72,3	86,6	90,7	94,4
Evaporator pressure drop (water side) - Plates	[kPa]	53	60	53	59	53	61	49	60	56	61	66
Evaporator pressure drop (water side) - Shell&Tubes	[kPa]	63	51	57	42	27	22	40	49	45	33	59
Hydronic kit - 100 kPa useful head (option)												
Buffer tank capacity	[L]	270	270	270	270	270	470	470	470	470	470	470
Pump type	-	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Pump motor nominal power	[kW]	2,2	2,2	2,2	2,2	4,0	4,0	4,0	4,0	5,5	5,5	5,5
Water connections												
Size	[inch]	3"	3"	3"	3"	4"	4"	4"	4"	5"	5"	5"
		DN80-PN16	DN80-PN16	DN80-PN16	DN80-PN16	DN100-PN16	DN100-PN16	DN100-PN16	DN100-PN16	DN125-PN16	DN125-PN16	DN125-PN16
Electrical data												
Power supply	-	400V/3ph/50Hz										
Total installed power compressors	[kW]	108,3	117,2	126,1	135,0	144,4	162,2	180,0	216,6	234,4	252,2	270,0
Maximum absorbed current compressors	[A]	196,2	213,4	230,6	247,8	261,6	295,8	330,4	392,4	426,8	461,2	495,6
Fans power input (total)	[kW]	6,0	6,0	6,0	6,0	9,1	9,1	9,1	9,1	12,1	12,1	12,1
Fan absorbed current (total)	[A]	13,3	13,3	13,3	13,3	20,0	20,0	20,0	20,0	26,6	26,6	26,6
Total installed power	[kW]	115,9	124,8	133,7	142,6	155,8	173,6	191,4	228,0	249,6	267,4	285,2
Maximum absorbed current (full load)	[A]	211,8	229,0	246,2	263,4	285,0	319,2	353,8	415,8	458,0	492,4	526,8
Noise levels (3)												
Total sound power (ST version)	[db(A)]	91	92	94	94	92	94	96	93	95	97	98
Total sound pressure (ST version)	[db(A)]	59	60	61	62	60	62	63	61	63	64	65
Total sound power (LN version)	[db(A)]	87	88	90	90	88	90	92	89	91	93	94
Total sound pressure (LN version)	[db(A)]	55	56	57	58	56	58	59	57	59	60	61
Total sound power (SL version)	[db(A)]	85	86	88	88	86	88	90	87	89	91	92
Total sound pressure (SL version)	[db(A)]	53	54	55	56	54	56	58	55	57	58	59
Dimensions and weights												
Length	[mm]	2.950	2.950	2.950	2.950	4.300	4.300	4.300	4.300	5.550	5.550	5.550
Width	[mm]	2.345	2.345	2.345	2.345	2.345	2.345	2.345	2.345	2.345	2.345	2.345
Height (ST - LN/SL)	[mm]	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525
Weight BASE unit / BP (brazen plates evaporator)	[Kg]	1.760	1.770	1.790	1.800	2.020	2.620	2.660	2.970	3.420	3.450	3.470
Weight BASE unit / BS (shell & tubes evaporator)	[Kg]	1.840	1.850	1.860	1.880	2.120	2.710	2.740	3.050	3.530	3.560	3.590
Weight INTEGRATED unit / IP (brazen plates evaporator)	[Kg]	1.900	1.910	1.930	1.940	2.200	2.830	2.870	3.180	3.650	3.670	3.700
Weight INTEGRATED unit / IS (shell & tubes evaporator)	[Kg]	1.980	1.990	2.000	2.020	2.290	2.920	2.950	3.260	3.760	3.790	3.810
Weight BASE unit / BP (brazen plates evaporator) / Low Noise	[Kg]	1.840	1.850	1.870	1.880	2.180	2.780	2.820	3.130	3.580	3.610	3.630
Weight BASE unit / BS (shell & tubes evaporator) / Low Noise	[Kg]	1.920	1.930	1.940	1.960	2.280	2.870	2.900	3.210	3.690	3.720	3.750
Weight INTEGRATED unit / IP (brazen plates evaporator) / Low Noise	[Kg]	2.120	2.130	2.150	2.160	2.530	3.200	3.240	3.550	4.030	4.060	4.080
Weight INTEGRATED unit / IS (shell & tubes evaporator) / Low Noise	[Kg]	2.200	2.210	2.220	2.240	2.630	3.290	3.320	3.630	4.140	4.170	4.200

Reference conditions:

- (1) Performance based on EN 14511-3:2013. Condenser air intake temperature = 35°C - Evaporator water temperature IN/OUT = 12/7°C - Fluid: pure water - Condensing coil: Cu/Al
- (2) Plate heat exchanger water temp. IN/OUT = 40/45°C - Condenser air intake temperature = 35°C - Evaporator water temperature IN/OUT = 12/7°C - Fluid: pure water - Condensing coil: Cu/Al
- (3) Sound power level in compliance with ISO 3744 - Sound pressure level (average) at 10 meter distance, unit in a free field on a reflective surface; non-binding value obtained from the sound power level

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performance tables

eks/BS	LWT	Condenser air temperature [°C]											
		25		30		35		40		43		45	
	°C	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
090-3-1	5	269,7	70,8	252,7	76,9	237,2	82,9	217,1	91,4	146,8	57,5	141,5	59,8
	6	277,8	71,7	260,0	77,9	242,0	84,7	223,0	92,5	151,0	58,2	146,8	59,9
	7	285,9	72,6	267,3	78,8	243,9	87,6	231,4	92,7	156,5	58,4	151,0	60,5
	8	294,0	73,4	275,3	79,7	262,9	87,9	237,7	93,8	161,0	58,9	156,6	60,7
	9	302,3	74,3	283,3	80,6	265,1	87,0	244,2	94,9	166,9	59,0	160,9	61,3
	10	310,5	75,2	291,4	81,7	272,6	88,1	250,6	94,8	171,3	59,8	165,3	62,0
	12	329,0	77,2	307,5	83,8	287,4	90,1	266,5	97,4	182,4	60,6	175,7	62,9
15	353,6	80,8	333,0	86,7	310,4	93,5	296,6	98,0	198,9	62,1	191,8	64,5	

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
100-3-1	5	288,6	78,8	270,4	85,6	253,7	92,4	232,3	101,8	157,1	63,9	151,4	66,4
	6	297,2	79,8	278,2	86,8	258,9	94,4	238,6	103,1	161,5	64,6	157,1	66,5
	7	305,9	80,8	286,0	87,8	262,2	96,6	247,6	103,3	167,5	64,8	161,5	67,2
	8	314,6	81,7	294,6	88,8	281,3	97,9	254,4	104,6	172,2	65,4	167,6	67,4
	9	323,4	82,7	303,1	89,8	283,7	96,9	261,2	105,8	178,6	65,5	172,1	68,1
	10	332,2	83,7	311,7	91,0	291,7	98,2	268,1	105,7	183,3	66,4	176,8	68,9
	12	352,0	85,9	329,0	93,3	307,5	100,5	285,1	108,5	195,1	67,3	187,9	69,8
15	378,3	90,0	356,2	96,6	332,1	104,2	317,4	109,3	212,8	69,0	205,2	71,7	

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
110-3-1	5	303,3	87,0	284,2	94,6	266,7	102,2	244,1	112,7	165,1	70,5	159,2	73,3
	6	312,4	88,2	292,4	95,9	272,1	104,4	250,8	114,1	169,7	71,3	165,1	73,4
	7	321,4	89,3	300,6	97,0	279,7	105,8	260,2	114,3	176,0	71,5	169,7	74,1
	8	330,6	90,3	309,6	98,2	295,6	108,3	267,3	115,8	181,0	72,2	176,1	74,3
	9	339,9	91,4	318,5	99,3	298,1	107,2	274,5	117,1	187,7	72,3	180,9	75,2
	10	349,1	92,5	327,6	100,6	306,5	108,6	281,8	117,0	192,6	73,2	185,8	76,1
	12	370,0	95,0	345,8	103,2	323,2	111,2	299,6	120,2	205,1	74,2	197,5	77,1
15	397,6	99,5	374,4	106,9	349,0	115,3	333,5	121,0	223,7	76,2	215,7	79,2	

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
120-3-1	5	315,4	94,6	295,5	102,9	277,3	111,2	253,8	122,7	171,7	76,5	165,5	79,6
	6	324,8	95,8	304,0	104,3	282,9	113,6	260,8	124,2	176,5	77,4	171,7	79,8
	7	334,3	97,1	312,6	105,6	293,8	114,0	270,6	124,5	183,0	77,6	176,5	80,5
	8	343,8	98,2	321,9	106,8	307,4	117,9	278,0	126,0	188,2	78,4	183,1	80,8
	9	353,5	99,4	331,2	108,0	310,0	116,6	285,5	127,5	195,2	78,5	188,1	81,7
	10	363,0	100,7	340,7	109,5	318,8	118,2	293,0	127,4	200,3	79,5	193,3	82,7
	12	384,7	103,3	359,5	112,3	336,1	121,0	311,6	130,8	213,3	80,6	205,4	83,8
15	413,5	108,3	389,3	116,3	362,9	125,6	346,8	131,7	232,6	82,8	224,3	86,0	

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
120-4-2	5	378,4	91,9	354,5	99,7	332,7	107,4	304,5	118,2	206,0	74,9	198,6	77,9
	6	389,7	93,1	364,8	101,0	339,4	109,7	312,9	119,7	211,8	75,8	206,0	78,0
	7	401,0	94,2	375,0	102,2	342,2	113,5	324,6	119,9	219,6	76,0	211,8	78,7
	8	412,5	95,3	386,2	103,3	368,8	113,7	333,5	121,4	225,8	76,7	219,7	78,9
	9	424,1	96,4	397,4	104,5	371,9	112,6	342,5	122,7	234,2	76,8	225,7	79,7
	10	435,6	97,6	408,7	105,8	382,4	114,0	351,6	122,6	240,4	77,8	231,9	80,7
	12	461,6	100,1	431,4	108,5	403,2	116,6	373,8	125,9	255,9	78,8	246,4	81,7
15	496,1	104,7	467,1	112,2	435,4	120,9	416,1	126,7	279,0	80,8	269,1	83,8	

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
140-4-2	5	408,0	107,6	382,3	116,8	358,8	126,1	328,4	138,9	222,1	87,4	214,1	90,9
	6	420,3	109,0	393,4	118,5	366,0	128,8	337,4	140,6	228,4	88,4	222,1	91,1
	7	432,5	110,4	404,4	119,8	370,8	131,9	350,0	140,9	236,8	88,7	228,4	91,9
	8	444,8	111,6	416,5	121,2	397,7	133,5	359,6	142,6	243,5	89,6	236,9	92,2
	9	457,3	113,0	428,5	122,6	401,1	132,2	369,4	144,2	252,5	89,7	243,3	93,2
	10	469,7	114,3	440,7	124,2	412,4	133,9	379,1	144,1	259,2	90,8	250,0	94,3
	12	497,7	117,3	465,2	127,3	434,8	137,0	403,1	148,0	275,9	92,1	265,7	95,5
15	534,9	122,8	503,7	131,8	469,5	142,1	448,7	149,0	300,9	94,4	290,1	98,0	

eks/BS business

performance tables

eks/BS	LWT	Condenser air temperature [°C]											
		25		30		35		40		43		45	
	°C	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
160-4-2	5	428,0	122,3	401,0	132,9	376,3	143,5	344,4	158,2	233,0	99,2	224,6	103,2
	6	440,8	123,9	412,6	134,8	383,9	146,7	353,9	160,2	239,5	100,3	233,0	103,3
	7	453,6	125,5	424,2	136,4	394,7	148,7	367,1	160,5	248,4	100,6	239,5	104,3
	8	466,6	126,9	436,8	137,9	417,2	152,1	377,2	162,5	255,4	101,6	248,5	104,6
	9	479,7	128,5	449,5	139,5	420,7	150,5	387,4	164,4	264,8	101,7	255,2	105,8
	10	492,6	130,1	462,3	141,4	432,6	152,5	397,6	164,3	271,9	103,0	262,2	107,0
	12	522,1	133,5	487,9	144,9	456,0	156,1	422,8	168,7	289,4	104,5	278,7	108,5
	15	561,1	139,8	528,3	150,1	492,5	162,0	470,7	169,8	315,6	107,2	304,3	111,3

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
180-6-2	5	478,5	151,8	448,4	165,1	420,7	178,4	385,1	197,0	260,5	122,6	251,1	127,6
	6	492,9	153,7	461,3	167,4	429,3	182,4	395,7	199,5	267,8	124,0	260,5	127,8
	7	507,2	155,7	474,3	169,4	445,8	183,1	410,5	199,8	277,7	124,4	267,8	129,1
	8	521,7	157,5	488,4	171,4	466,4	189,2	421,8	202,4	285,6	125,7	277,9	129,4
	9	536,3	159,5	502,6	173,4	470,4	187,2	433,2	204,7	296,1	125,8	285,4	130,9
	10	550,8	161,5	516,9	175,7	483,7	189,8	444,6	204,5	304,0	127,5	293,2	132,5
	12	583,7	165,8	545,5	180,2	509,9	194,3	472,7	210,1	323,6	129,3	311,6	134,3
	15	627,4	173,7	590,7	186,7	550,7	201,6	526,3	211,5	352,9	132,7	340,3	137,9

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
200-6-2	5	587,0	154,5	550,0	167,8	516,1	181,1	472,4	199,6	319,5	125,3	308,0	130,4
	6	604,5	156,5	565,9	170,1	526,5	185,1	485,4	202,2	328,5	126,8	319,5	130,5
	7	622,1	158,4	581,8	172,1	533,4	189,5	503,5	202,5	340,6	127,1	328,5	131,8
	8	639,9	160,2	599,1	174,1	572,1	191,9	517,3	205,0	350,3	128,4	340,9	132,2
	9	657,9	162,2	616,5	176,1	576,9	189,9	531,4	207,4	363,2	128,6	350,1	133,6
	10	675,6	164,2	634,0	178,4	593,3	192,4	545,4	207,2	372,8	130,2	359,7	135,2
	12	716,0	168,5	669,2	182,9	625,5	196,9	579,9	212,8	396,9	132,0	382,3	137,0
	15	769,5	176,4	724,6	189,4	675,4	204,3	645,5	214,2	432,9	135,4	417,4	140,6

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
220-6-2	5	605,9	170,5	567,7	185,3	532,7	200,1	487,6	220,7	329,8	138,1	317,9	143,7
	6	624,0	172,7	584,1	187,9	543,5	204,5	501,0	223,5	339,1	139,7	329,8	143,9
	7	642,1	174,9	600,5	190,1	558,8	207,3	519,8	223,9	351,6	140,1	339,1	145,3
	8	660,5	176,9	618,4	192,3	590,6	212,1	534,0	226,7	361,5	141,5	351,8	145,7
	9	679,1	179,1	636,3	194,5	595,5	209,9	548,5	229,3	374,9	141,7	361,3	147,3
	10	697,4	181,3	654,5	197,1	612,4	212,7	562,9	229,1	384,9	143,5	371,3	149,1
	12	739,1	186,1	690,7	202,1	645,6	217,7	598,5	235,3	409,7	145,5	394,6	151,1
	15	794,3	194,9	747,9	209,3	697,2	225,9	666,3	236,9	446,8	149,3	430,8	155,1

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
240-6-2	5	624,6	187,3	585,2	203,6	549,2	220,0	502,7	242,7	340,0	151,5	327,8	157,6
	6	643,3	189,7	602,2	206,5	560,3	224,8	516,5	245,8	349,6	153,2	340,0	157,9
	7	662,0	192,1	619,1	208,9	581,9	225,7	535,8	246,3	362,5	153,7	349,6	159,4
	8	680,9	194,3	637,5	211,4	608,8	233,2	550,5	249,4	372,7	155,2	362,7	159,9
	9	700,1	196,8	656,0	213,8	614,0	230,8	565,4	252,3	386,5	155,4	372,5	161,6
	10	719,0	199,2	674,7	216,7	631,3	233,9	580,3	252,0	396,8	157,4	382,7	163,6
	12	761,9	204,5	712,1	222,2	665,6	239,4	617,1	258,9	422,4	159,6	406,8	165,8
	15	818,9	214,2	771,1	230,1	718,8	248,5	686,9	260,7	460,6	163,8	444,2	170,2

Notes:

- Cc** = Cooling capacity [kW]
- Pi** = Power input of the unit (compressors + fans) [kW]
- LWT** = Evaporator Leaving Water Temperature
- = Part load conditions

ETHYLENE GLYCOL Mixture (Meg) - Correction Factor

If a Meg is used instead of pure water, it causes a variation in the performance of the unit. For correct data please use the Correction Factor indicated in the following table:

	0 (pure water)	Meg 20%	Meg 30%	Meg 40% (1)
Freezing point	0°C	-8,9°C	-15,8°C	-24,8°C
CcCF	1	0,980	0,974	0,965

CcCF: Correction factor for cooling capacity

(1) For Meg = 40% and for data concerning other kind of anti-freeze solutions please contact our Sales Dept.

eks/HE

055-2-1 ↔ 180-6-2



Refrigerant
R410A | GWP=2.088



Scroll
Compressor



Shell & Tube
exchanger



Axial
fan



Braze plate
heat exchanger

MultiScroll Air-cooled liquid chillers
High efficiency



Configuration

- B - Base
- I - Integrated

Type

- ST - Standard
- LN - Low Noise
- SL - Super Low Noise

Solution

- AS - Standard equipment
- DS - Desuperheater
- HR - Heat Recovery

Cooling capacity 167 - 547 kW

EUROVENT "A" Class

Structure	Structure specifically designed for outdoor installation. Basement and frame in hot-galvanised shaped sheet steel with a suitable thickness. All parts are polyester-powder painted to assure total weather resistance (RAL 7032 standard colour, others on request).
Compressor	Hermetic scroll compressor complete with motor over-temperature and over-current devices and protection against excessive gas discharge temperature. Fitted on rubber antivibration mounts and complete with oil charge.
EC-Fan	Premium-Axial-Fans with bionical shaped blades and high efficient EC (Electronically Commutated) external rotor motors, sealed in protection IP54 and thermal class THCL 155. The motor efficiency class complies with IE4.
Air heat exchanger	Microchannel Microchannel technology increases the primary to secondary surface area ratio and reduces the tube's air shadow to provide maximum heat exchange through our condensers. Due to their small hydraulic diameter, microchannel aluminium tubes transfer heat more efficiently than the traditional round copper tubes.
Water heat exchanger	Plate-type Made of AISI 316 steel complete with water differential pressure switch. Shell covered with closed-cell neoprene anti-condensate material. Shell & tubes All extremely efficient with low refrigerant charge and very stable operating performance due to excellent refrigerant distribution, thermally insulated by vapour-proof closed cell.
Electrical board	Switchboard made according to standards IEC 204-1/EN60204-1, complete with contactor and protection for compressor and fans. Main isolator and door interlock safety device.
Control	The microprocessor controls the unit capacity by timing the compressors and checks the operating alarms with the possibility to connect to BMS.
Refrigerant circuit	Filter dryer, moisture-liquid sight glass, electronic expansion valve, HP and LP pressure sensors and safety valve.
Water circuit (Integrated):	Automatic charging cock with gauge, safety valve, expansion tank, water pump(s), water tank.

MAIN ACCESSORIES

- Spring vibration isolation
- Modulating fan speed condensing control (phase-cut)
- Soft start
- Compressor suction/discharge intercepting valve
- Remote control panel
- Max and min voltage relay
- Refrigerant gas HP and LP pressure gauges
- Electromechanical flow switch
- Pumping group, 1 pump
- Additional stand-by water pump
- Automatic water filling valve (closed circuit)

► For the complete list of accessories please see pages 18-19

eks/HE high efficiency

eks/HE high efficiency		055-2-1HE	060-2-1HE	070-2-1HE	080-4-2HE	090-4-2HE	100-4-2HE	110-4-2HE	120-4-2HE	140-4-2HE	160-4-2HE	180-6-2HE
Cooling												
Cooling capacity (1) (EN 14511 VALUE)	[kW]	167	186	207	231	260	285	333	373	414	479	547
Compressors power input (1) (total)	[kW]	44,4	50,5	57,8	61,9	70,0	79,7	88,8	100,9	115,5	127,2	155,8
EER	-	3,25	3,19	3,09	3,20	3,18	3,12	3,25	3,19	3,09	3,24	3,06
ESEER	-	4,53	4,59	4,30	4,56	4,63	4,39	4,39	4,31	4,43	4,40	4,36
EUROVENT classification	-	A	A	A	A	A	A	A	A	A	A	A
Desuperheater (option)												
Heating capacity (2)	[kW]	42	48	52	58	64	71	83	92	103	120	137
Exchanger water flow (2)	[m ³ /h]	7,2	8,3	8,9	9,9	11,0	12,3	14,3	15,8	17,8	20,6	23,5
Exchanger pressure drop (water side) - Plates	[kPa]	20	22	24	23	26	22	23	27	22	22	24
Total Heat Recovery (option)												
Heating capacity (2)	[kW]	205	230	257	284	320	354	409	459	513	588	682
Exchanger water flow (2)	[m ³ /h]	35,2	39,5	44,2	48,8	55,1	60,9	70,4	79,0	88,3	101,2	117,3
Exchanger pressure drop (water side) - Plates	[kPa]	40	45	39	47	46	40	44	47	38	41	45
Refrigerant circuit												
Refrigerant	-	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Number of refrigerant circuits	[nr]	1	1	1	2	2	2	2	2	2	2	2
Compressor type	-	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL
Compressors quantity	-	2	2	2	4	4	4	4	4	4	4	6
Fans quantity / type	[-]	4/axial (AC)	4/axial (AC)	4/axial (AC)	6/axial (AC)	6/axial (AC)	6/axial (AC)	8/axial (AC)	8/axial (AC)	8/axial (AC)	10/axial (AC)	10/axial (AC)
Total air flow	[m ³ /h]	86.000	91.000	96.000	129.000	136.500	136.500	172.000	182.000	192.000	215.000	240.000
Evaporator water flow (1)	[m ³ /h]	28,6	32,1	35,6	39,7	44,7	49,1	57,3	64,1	71,2	82,4	94,1
Evaporator pressure drop (water side) - Plates	[kPa]	51	58	51	56	51	58	47	58	54	59	64
Evaporator pressure drop (water side) - Shell&Tubes	[kPa]	48	52	56	43	28	22	40	50	44	35	52
Hydronic kit - 100 kPa useful head (option)												
Buffer tank capacity	[L]	270	270	270	270	270	470	470	470	470	470	470
Pump type	-	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Pump motor nominal power	[kW]	2,2	2,2	2,2	2,2	4,0	4,0	4,0	4,0	5,5	5,5	5,5
Water connections												
Size	[inch]	3" DN80-PN16	3" DN80	3" DN80	3" DN80	4" DN100	4" DN100	4" DN100	4" DN100	5" DN125	5" DN125	5" DN125
Electrical data												
Power supply	-	400V/3ph/50Hz										
Total installed power compressors	[kW]	64,1	72,2	81,1	92,0	102,0	112,0	128,2	144,4	162,2	180,0	216,6
Maximum absorbed current compressors	[A]	113,9	130,8	148,0	160,0	177,0	194,0	227,8	261,6	296,0	330,4	392,4
Fans power input (total)	[kW]	6,4	7,5	8,7	9,7	11,2	11,2	12,9	15,0	17,4	19,3	21,8
Fan absorbed current (total)	[A]	9,8	11,6	13,4	14,8	17,3	17,3	19,7	23,1	26,7	29,5	33,4
Total installed power	[kW]	945	998	1.050	945	998	998	945	998	998	945	1.050
Maximum absorbed current (full load)	[A]	123,7	142,4	161,4	174,8	194,3	211,3	247,5	284,7	322,7	359,9	425,8
Noise levels (3)												
Total sound power (ST version)	[db(A)]	93	93	94	94	94	95	96	96	97	98	97
Total sound pressure (ST version)	[db(A)]	59	60	61	62	60	62	63	61	63	64	65
Total sound power (LN version)	[db(A)]	89	89	90	90	90	91	92	92	93	94	93
Total sound pressure (LN version)	[db(A)]	55	56	57	58	56	58	59	57	59	60	61
Total sound power (SL version)	[db(A)]	87	87	88	88	88	89	90	90	91	92	91
Total sound pressure (SL version)	[db(A)]	53	54	55	56	54	56	58	55	57	58	59
Dimensions and weights												
Length	[mm]	2.950	2.950	2.950	4.300	4.300	4.300	5.550	5.550	5.550	6.800	6.800
Width	[mm]	2.345	2.345	2.345	2.345	2.345	2.345	2.345	2.345	2.345	2.345	2.345
Height (ST - LN/SL)	[mm]	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525	2.465-2.525
Weight BASE unit / BP (brazed plates evaporator)	[Kg]	1.570	1.590	1.610	2.450	2.490	2.550	3.020	3.050	3.080	3.600	3.910
Weight BASE unit / BS (shell & tubes evaporator)	[Kg]	1.650	1.670	1.680	2.220	2.280	2.300	2.730	2.750	2.820	3.340	3.310
Weight INTEGRATED unit / IP (brazed plates evaporator)	[Kg]	1.700	1.720	1.740	2.650	2.720	2.760	3.260	3.270	3.290	3.830	4.170
Weight INTEGRATED unit / IS (shell & tubes evaporator)	[Kg]	1.780	1.800	1.810	2.390	2.470	2.480	2.940	2.940	3.010	3.560	3.520
Weight BASE unit / BP (brazed plates evaporator) / Low Noise	[Kg]	1.650	1.670	1.690	2.530	2.650	2.710	3.180	3.210	3.240	3.760	4.070
Weight BASE unit / BS (shell & tubes evaporator) / Low Noise	[Kg]	1.730	1.750	1.760	2.300	2.440	2.460	2.890	2.910	2.980	3.500	3.470
Weight INTEGRATED unit / IP (brazed plates evaporator) / Low Noise	[Kg]	1.910	1.930	1.950	2.910	3.080	3.120	3.660	3.650	3.650	4.230	4.580
Weight INTEGRATED unit / IS (shell & tubes evaporator) / Low Noise	[Kg]	1.990	2.010	2.020	2.630	2.820	2.820	3.310	3.300	3.350	3.930	3.890

Reference conditions:

- (1) Performance based on EN 14511-3:2013. Condenser air intake temperature = 35°C - Evaporator water temperature IN/OUT = 12/7°C - Fluid: pure water - Condensing coil: Cu/Al
- (2) Plate heat exchanger water temp. IN/OUT = 40/45°C - Condenser air intake temperature = 35°C - Evaporator water temperature IN/OUT = 12/7°C - Fluid: pure water - Condensing coil: Cu/Al
- (3) Sound power level in compliance with ISO 3744 - Sound pressure level (average) at 10 meter distance, unit in a free field on a reflective surface; non-binding value obtained from the sound power level

eks/HE high efficiency

performance tables

eks/HE	LWT	Condenser air temperature [°C]											
		25		30		35		40		43		45	
	°C	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
055-2-1HE	5	178,5	42,4	169,2	45,6	158,4	49,7	148,2	53,9	141,1	57,0	136,5	59,3
	6	185,0	42,5	174,2	46,1	164,1	49,7	152,5	54,4	146,6	57,1	141,7	59,3
	7	190,6	42,9	179,4	46,6	166,5	50,9	158,2	54,6	150,7	57,7	146,9	59,5
	8	196,2	43,4	186,0	46,6	175,0	50,9	162,6	55,1	156,3	57,8	151,1	60,0
	9	203,2	43,4	191,3	47,1	180,2	51,0	168,6	55,2	160,7	58,3	156,6	60,1
	10	209,2	44,0	198,2	47,3	186,7	51,0	173,4	55,9	166,4	58,5	161,0	60,8
	12	222,6	44,6	210,9	47,9	197,3	52,1	184,5	56,5	177,4	59,2	171,3	61,6
15	243,4	45,6	230,4	49,0	216,9	52,9	203,1	57,2	193,5	60,6	186,9	62,9	

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
060-2-1HE	5	196,8	48,8	186,5	52,5	174,6	57,2	163,4	62,0	155,6	65,6	150,5	68,2
	6	204,0	48,9	192,1	53,1	180,9	57,2	168,1	62,6	161,6	65,7	156,2	68,2
	7	210,2	49,4	197,8	53,6	186,3	57,9	174,4	62,8	166,1	66,4	161,9	68,4
	8	216,4	50,0	205,0	53,7	193,0	57,9	179,3	63,4	172,3	66,5	166,6	69,0
	9	224,0	50,0	210,9	54,2	198,7	58,6	185,9	63,5	177,2	67,1	172,6	69,1
	10	230,7	50,6	218,5	54,4	205,8	58,7	191,2	64,3	183,5	67,3	177,5	69,9
	12	245,4	51,3	232,5	55,1	217,6	59,9	203,4	65,0	195,5	68,0	188,9	70,8
15	268,4	52,5	254,0	56,4	239,1	60,9	223,9	65,8	213,3	69,7	206,1	72,4	

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
070-2-1HE	5	216,3	56,6	205,0	60,9	191,9	66,3	179,7	71,9	171,0	76,0	165,4	79,0
	6	224,2	56,7	211,1	61,5	198,9	66,3	184,8	72,6	177,7	76,1	171,7	79,0
	7	231,0	57,3	217,4	62,1	206,9	66,5	191,8	72,8	182,6	77,0	178,0	79,3
	8	237,8	58,0	225,4	62,2	212,1	67,1	197,1	73,5	189,4	77,0	183,1	80,0
	9	246,3	58,0	231,9	62,9	218,4	67,9	204,3	73,6	194,7	77,8	189,8	80,1
	10	253,6	58,7	240,1	63,0	226,2	68,0	210,1	74,5	201,7	78,0	195,1	81,0
	12	269,8	59,5	255,6	63,8	239,1	69,5	223,6	75,3	215,0	78,8	207,7	82,0
15	295,0	60,8	279,3	65,4	262,8	70,5	246,1	76,2	234,5	80,8	226,6	83,8	

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
080-4-2HE	5	247,2	59,8	234,3	64,3	219,3	69,9	205,3	75,8	195,5	80,1	189,0	83,3
	6	256,3	59,9	241,3	64,9	227,3	70,0	211,2	76,6	203,1	80,2	196,2	83,3
	7	264,0	60,5	248,5	65,6	230,7	71,6	219,2	76,8	208,7	81,2	203,4	83,6
	8	271,8	61,2	257,6	65,7	242,5	70,8	225,2	77,5	216,5	81,2	209,3	84,3
	9	281,5	61,2	265,0	66,4	249,6	71,7	233,5	77,6	222,6	82,0	216,9	84,4
	10	289,8	61,9	274,5	66,5	258,6	71,8	240,2	78,5	230,5	82,3	222,9	85,4
	12	308,4	62,8	292,1	67,4	273,3	73,3	255,5	79,4	245,7	83,1	237,3	86,5
15	337,2	64,2	319,2	69,0	300,4	74,4	281,3	80,4	268,0	85,2	258,9	88,4	

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
090-4-2HE	5	274,6	68,6	260,3	73,7	243,7	80,1	228,1	86,8	217,2	91,8	210,0	95,4
	6	284,7	68,7	268,1	74,4	252,5	80,2	234,7	87,7	225,6	91,9	218,0	95,4
	7	293,4	69,4	276,1	75,2	260,1	81,2	243,5	87,9	231,9	92,9	226,0	95,7
	8	302,0	70,2	286,2	75,3	269,4	81,2	250,2	88,8	240,6	93,1	232,6	96,6
	9	312,7	70,2	294,4	76,0	277,4	82,1	259,5	88,9	247,3	93,9	241,0	96,7
	10	322,0	71,0	305,0	76,3	287,3	82,2	266,9	90,0	256,1	94,2	247,7	97,8
	12	342,6	72,0	324,5	77,2	303,7	84,0	283,9	90,9	273,0	95,2	263,7	99,0
15	374,6	73,6	354,6	79,0	333,8	85,2	312,5	92,1	297,8	97,5	287,7	101,2	

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
100-4-2HE	5	298,3	77,3	282,7	83,2	264,7	90,6	247,8	98,4	235,9	104,0	228,1	108,2
	6	309,2	77,4	291,2	84,1	274,3	90,7	254,8	99,4	245,0	104,2	236,8	108,2
	7	318,6	78,3	299,9	84,9	285,4	90,9	264,4	99,6	251,9	105,4	245,5	108,6
	8	328,0	79,2	310,8	85,1	292,6	91,8	271,8	100,6	261,2	105,5	252,6	109,6
	9	339,6	79,2	319,8	85,9	301,2	92,9	281,8	100,7	268,6	106,5	261,7	109,7
	10	349,7	80,1	331,2	86,2	312,0	93,1	289,8	101,9	278,2	106,9	269,0	110,9
	12	372,1	81,3	352,4	87,3	329,8	95,0	308,3	103,0	296,4	108,0	286,4	112,4
15	406,8	83,1	385,1	89,4	362,5	96,5	339,4	104,4	323,4	110,7	312,4	114,9	

eks/HE high efficiency

performance tables

eks/HE	LWT	Condenser air temperature [°C]											
		25		30		35		40		43		45	
	°C	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
110-4-2HE	5	356,9	84,8	338,3	91,3	316,7	99,3	296,5	107,8	282,3	114,0	273,0	118,6
	6	370,0	85,0	348,4	92,2	328,2	99,5	305,0	108,9	293,2	114,1	283,3	118,6
	7	381,3	85,9	358,8	93,2	333,1	101,7	316,4	109,2	301,4	115,5	293,7	119,0
	8	392,5	86,8	372,0	93,3	350,1	101,7	325,2	110,2	312,6	115,6	302,2	120,1
	9	406,4	86,8	382,6	94,2	360,5	101,9	337,2	110,4	321,4	116,7	313,2	120,2
	10	418,5	87,9	396,3	94,5	373,3	102,0	346,8	111,7	332,9	117,1	321,9	121,5
	12	445,3	89,1	421,7	95,7	394,7	104,2	369,0	112,9	354,7	118,3	342,7	123,1
15	486,8	91,1	460,8	98,0	433,8	105,8	406,1	114,4	387,0	121,3	373,9	125,8	

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
120-4-2HE	5	393,5	97,7	373,0	105,1	349,2	114,3	326,9	124,0	311,2	131,1	300,9	136,4
	6	408,0	97,8	384,2	106,2	361,8	114,5	336,2	125,3	323,2	131,3	312,4	136,4
	7	420,3	98,9	395,6	107,2	372,7	115,9	348,9	125,6	332,3	132,8	323,8	136,9
	8	432,7	100,0	410,1	107,4	386,0	115,9	358,5	126,8	344,7	133,0	333,2	138,1
	9	448,1	100,0	421,8	108,5	397,4	117,3	371,8	127,0	354,3	134,2	345,3	138,2
	10	461,3	101,2	436,9	108,8	411,6	117,4	382,3	128,5	367,0	134,7	354,9	139,8
	12	490,9	102,6	465,0	110,2	435,1	119,9	406,8	129,9	391,1	136,1	377,8	141,6
15	536,7	104,9	508,1	112,8	478,2	121,7	447,8	131,6	426,7	139,5	412,2	144,79	

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
140-4-2HE	5	432,6	113,2	410,0	121,8	383,8	132,5	359,3	143,7	342,1	152,0	330,8	158,0
	6	448,5	113,4	422,3	123,0	397,8	132,7	369,6	145,2	355,3	152,1	343,4	158,0
	7	462,1	114,7	434,9	124,3	413,8	133,0	383,5	145,5	365,3	153,9	356,0	158,6
	8	475,6	115,9	450,8	124,5	424,3	134,3	394,1	147,0	378,9	154,1	366,3	160,0
	9	492,6	115,9	463,7	125,7	436,9	135,9	408,7	147,1	389,5	155,5	379,5	160,2
	10	507,1	117,3	480,3	126,1	452,4	136,1	420,3	148,9	403,4	156,1	390,1	161,9
	12	539,6	118,9	511,1	127,7	478,3	138,9	447,1	150,5	429,9	157,7	415,3	164,1
15	590,0	121,6	558,5	130,7	525,7	141,1	492,2	152,5	469,0	161,6	453,1	167,7	

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
160-4-2HE	5	505,9	123,6	479,5	132,9	448,9	144,6	420,2	156,8	400,0	165,8	386,9	172,4
	6	524,5	123,8	493,9	134,3	465,2	144,8	432,2	158,4	415,5	166,0	401,6	172,4
	7	540,4	125,1	508,6	135,6	479,1	146,5	448,5	158,8	427,2	167,9	416,3	173,0
	8	556,3	126,5	527,2	135,8	496,2	146,5	460,9	160,3	443,1	168,1	428,3	174,5
	9	576,0	126,5	542,3	137,2	510,9	148,3	478,0	160,5	455,5	169,7	443,8	174,7
	10	593,1	128,0	561,7	137,6	529,1	148,5	491,5	162,5	471,8	170,2	456,2	176,7
	12	631,1	129,8	597,7	139,3	559,4	151,6	522,9	164,2	502,8	172,0	485,7	179,0
15	690,0	132,7	653,2	142,6	614,8	153,9	575,6	166,4	548,5	176,3	529,9	182,9	

	°C	25		30		35		40		43		45	
		Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi	Cc	Pi
180-6-2HE	5	571,7	151,0	541,9	162,5	507,3	177,0	474,9	192,1	452,1	203,2	437,2	211,4
	6	592,7	151,2	558,1	164,2	525,7	177,2	488,5	194,0	469,6	203,4	453,9	211,4
	7	610,7	152,9	574,8	165,9	547,0	177,6	506,9	194,5	482,8	205,8	470,5	212,1
	8	628,7	154,6	595,8	166,1	560,8	179,4	520,9	196,5	500,7	206,1	484,1	214,0
	9	651,0	154,6	612,9	167,8	577,4	181,5	540,2	196,7	514,8	208,0	501,6	214,3
	10	670,3	156,5	634,8	168,3	598,0	181,8	555,5	199,1	533,2	208,7	515,6	216,7
	12	713,2	158,7	675,5	170,5	632,2	185,6	591,0	201,3	568,2	210,9	548,9	219,6
15	779,8	162,3	738,2	174,6	694,8	188,5	650,6	203,9	619,9	216,2	598,9	224,4	

Notes:

Cc = Cooling capacity [kW]
Pi = Power input of the unit (compressors + fans) [kW]
LWT = Evaporator Leaving Water Temperature

ETHYLENE GLYCOL Mixture (Meg) - Correction Factor

If a Meg is used instead of pure water, it causes a variation in the performance of the unit.
 For correct data please use the Correction Factor indicated in the following table:

	0 (pure water)	Meg 20%	Meg 30%	Meg 40% (1)
Freezing point	0°C	-8,9°C	-15,8°C	-24,8°C
CcCF	1	0,980	0,974	0,965

CcCF: Correction factor for cooling capacity

(1) For Meg = 40% and for data concerning other kind of anti-freeze solutions please contact our Sales Dept.

connected controller

Thanks to a Multitasking Operating System and to the adoption of standard protocols, local and remote connectivity the controller used in eks chillers is the most advanced technology available.



NEW OPERATING SYSTEM

New Multitasking Operating System ensures optimal system resource usage, extended datatypes for user application (32bit floating point numbers) application speed increase and independent protocol engines.



CONNECTIVITY

The controller has two integrated Ethernet interfaces, three serial interfaces and two USB ports.

A great choice of communication protocols is possible (Modbus, Carel, BACNet, LON, Konnex, TCP/IP, HTTP, FTP, DHCP, DNS, NTP, SNMP and many others).

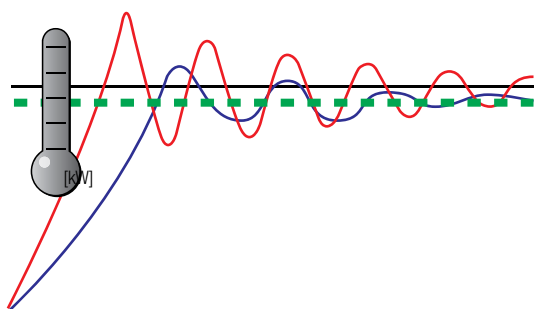


CLOUD SERVICE

Plug & Play solution for tERA platform connection. All tERA services are available just connecting the Ethernet plug to your home or office network, without the need for an external connection box.

The application software “**ekapt**” developed for **eks** chillers allows an easy access to the machine configuration and management parameters with the menu system organised by device. There are three password levels to allow three different access modes to the parameters (read only for assistance, edit for servicing, total access for the manufacturer). The main screen gives quick access to the user functions without a password (information on the status of the machine components, On-Off and machine operating mode, set points).

PID control



There are two types of PID control:

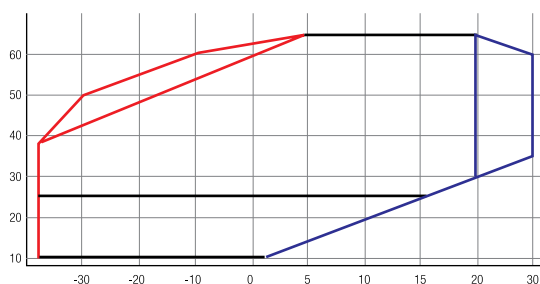
- PID control on start-up
- PID control during operation

The start-up control must prevent an excess of requested power.

Since at start-up the status of the load is not known but only the temperature is, the power must be entered little by little, waiting for the reaction of the system.

The control during operation must be quick in order to follow any load variations and maintain the water temperature as close to the set-point value as possible.

Compressor's envelope management



The operating limits (hereafter defined as envelope) of the compressors are controlled.

This control cannot be disabled in order to prevent the compressor from working outside of the safety limits dictated by the manufacturer. All of the compressors inserted thus contain the envelope data. When the operating condition is outside of the envelope, the alarm delay starts counting: if the operating condition remains outside of the envelope when the delay has elapsed, a specific alarm is activated, which stops the compressor; if, on the other hand, the operating condition returns within the envelope limits, the alarm delay counter is reset.

Compressors power distribution



“**ekapt**” application software provides management of the power distributed to the compressors in the best way possible to increase the efficiency of the unit.

The behaviour of power distribution changes depending on the configuration, 1 or 2 circuits and the power ratio between compressors. In the event of an alarm for one compressor, the next available compressor will be turned on as a replacement if the request is high enough. For units with two circuits and prevention active in one circuit, the rotation will compensate for the limited circuit by increasing the request on the available circuit.

Web commissioning tool



Through internet browser, inserting the IP address of the control card, it will be possible to access the “**ekapt**” application in order to see and edit service parameters.

The application is divided in:

Main: in which are shown the main status parameter of the unit;

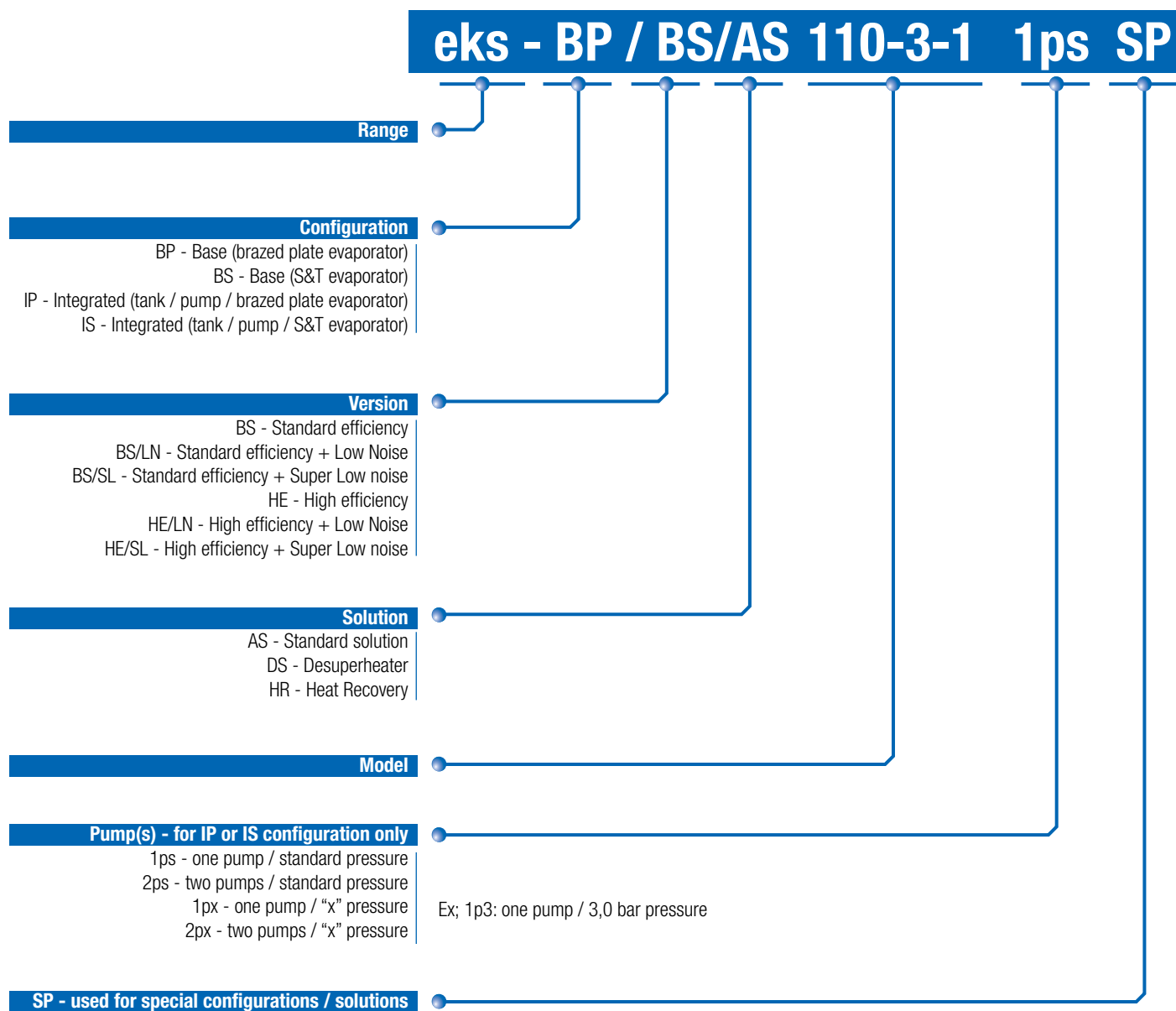
Synoptic: main unit parameters, according to the circuit number and Unit live trend available.

Parameters: it is necessary to be logged-in to open the Parameter menu. It is necessary to be, at least, Service user to be able to edit all the parameters.

Alarms List: alarms list, with start and end period of the alarm.

eks how to select

The below legend allows you to easily select the proper configuration of eks chiller.

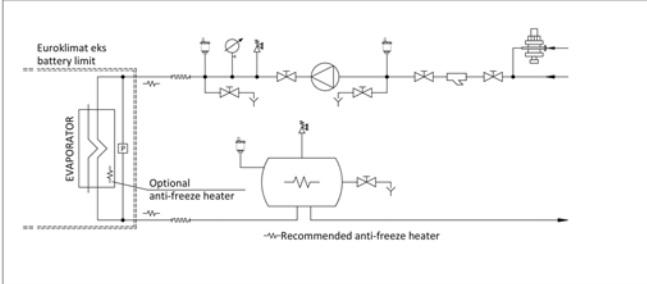


Some of the special "SP" configuration / solutions that Euroklimat offers are:

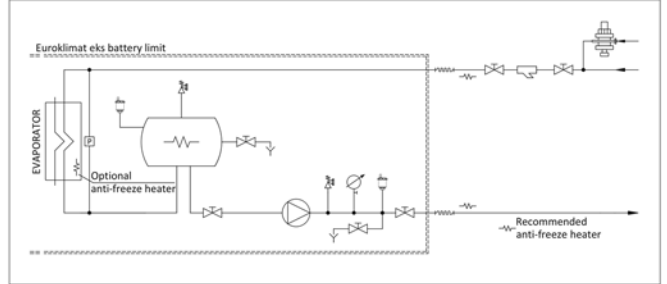
- eks with recirculating water pump + user pump
- eks with recirculating water pump + buffer tank
- eks with recirculating water pump + buffer tank + additional heat exchanger

eks configuration and solutions

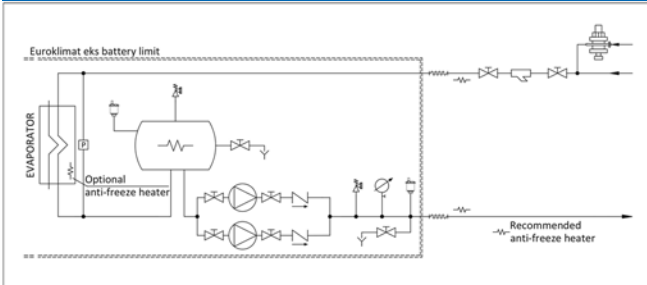
TYPICAL UNIT CONNECTION



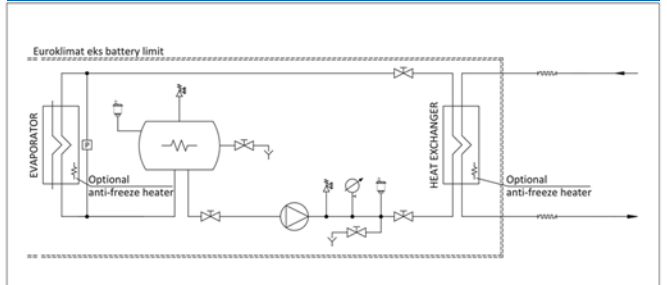
TYPICAL UNIT CONNECTION WITH PUMP + BUFFER TANK



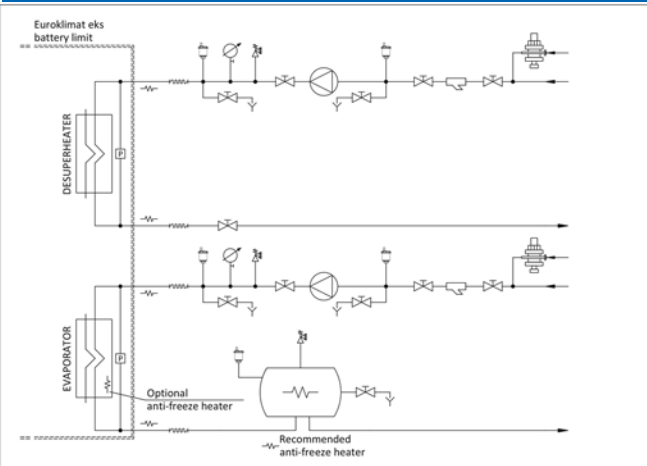
TYPICAL UNIT CONNECTION WITH PUMP + RESERVE PUMP + BUFFER TANK



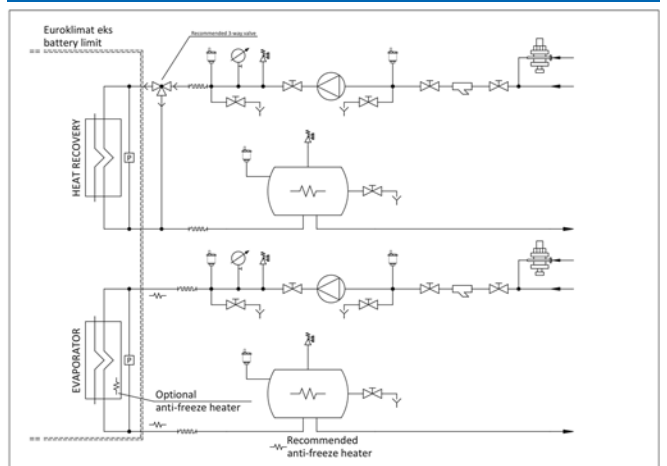
TYPICAL UNIT CONNECTION WITH PUMP + BUFFER TANK + ADDITIONAL HEAT EXCHANGER



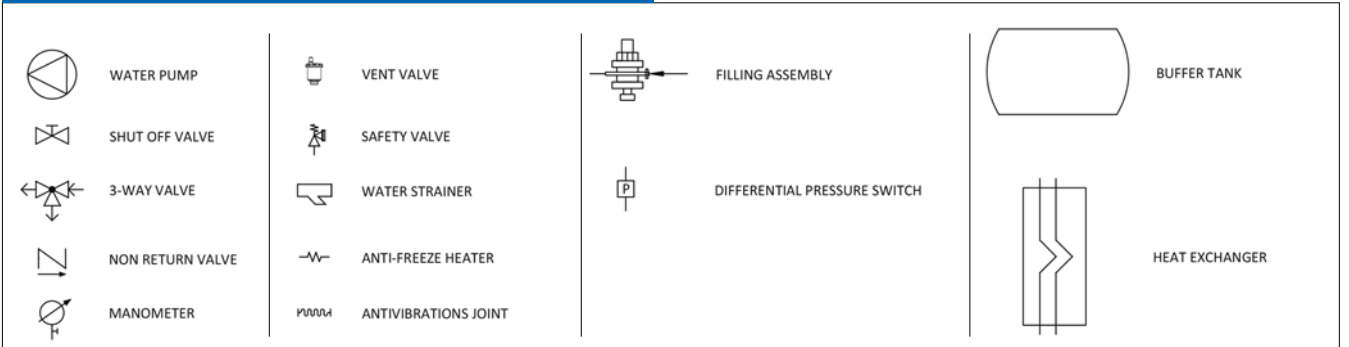
TYPICAL UNIT CONNECTION WITH DESUPERHEATER



TYPICAL UNIT CONNECTION WITH HEAT RECOVERY



LEGEND



standard equipment and accessories

General	Business	High Efficiency
Anti-vibration spring mounts	○	○
Anti-vibration seismic spring mounts	○	○
Standard painting, color RAL 7035	●	●
Standard paint, RAL on request	○	○
Condensing coils protection grills	○	○
Anti-intrusion grills	○	○
System of blocks for long-distance transport	○	○
Condensing section	Business	High Efficiency
On/Off condensing pressure control (step)	●	-
Phase-cut modulating fan speed controller - CPC	○	-
EC Fans (brushless motor)	○	●
EC Fans (brushless motor) with diffuser kit	○ (standard for SL)	○ (standard for SL)
Microchannel condensing coil made of aluminum	○	●
Microchannel condensing coil made of aluminum with ElectroFin® treatment	○	○
Cu/Al condensing coil	●	○
Cu/Al condensing coil with ElectroFin® treatment	○	○
Cu/Cu condensing coil	○	○
Refrigerant circuit section	Business	High Efficiency
Compliance with PED Directive (2014/68/EU)	●	●
Low pressure transducer	●	●
High pressure transducer	○ (included with CPC)	●
Refrigerant leak detector	○	○
High & Low pressure manometers	○	○
Compressor suction valve (rotalock)	○	○
Compressor discharge valve (rotalock)	○	○
Compressor crankcase oil heater	○	○
Electronic expansion valve	●	●
Oil level management with equalizer tube	●	●
Intelligent oil management "Traxoil®" with additional oil separator	★	★
<i>* available for some models only. Ask to Euroklimat for more information.</i>		
Water circuit section	Business	High Efficiency
Differential pressure switch	● (excluded ver. with S&T)	● (excluded ver. with S&T)
Electromechanical water flow switch (supplied separately)	○	○
Electronic water flow switch (supplied separately)	○	○
Air vent valve (manual)	●	●
Air vent valve (automatic)	○	○
Thermal insulation - thickness 9 mm	●	●
Increased thermal insulation - thickness 19 mm	○	○
Water filter 200 microns (supplied separately)	○	○
Water pipes with trace heating	○	○
Victaulic® type hydraulic connections	○	○

standard equipment and accessories

Electric cabinet section	Business	High Efficiency
Forced air cooling system with filter	●	●
Forced air cooling system with filter - plus version for hot climates	○	○
Anti-condensation heater with thermostat	○	○
Device locking doors windproof cabinet	●	●
Cabinet minimum protection rating IP54	●	●
Power supply without neutral	●	●
Phase monitoring sequence relay	●	●
Circuit breakers instead of fuses	○	○
Power factor correction capacitors for compressors	○	○
Min./max. voltage relay	○	○
Compressors soft-starter	○	○
Signaling contacts of compressor operation	○	○
LED cabinet lighting	○	○
Service socket 230VAC - max. 150 Watt	○	○
Emergency power electronic expansion valve (Ultracap module)	○	○
Device for measuring the electric energy consumed (Energy Meter)	○	○
Control section	Business	High Efficiency
Integrated Electronic Security module on-board compressor	●	●
Backlit display	●	●
Remote control panel	○	○
Integrated control of the electronic expansion valve	●	●
Operating hour meter	●	●
Prevent compressor operating limits (envelope control)	●	●
Prevent Antifreeze evaporator function	●	●
Alarm history up to 64 events (data logger function)	●	●
Second set-point from digital input	○	○
Remote On/Off digital input	●	●
Set point compensation by outside temperature	○	○
ModBus® interface (RS 485)	●	●
LonWorks® interface (RS 485)	○	○
BACnet® MS/TP interface	○	○
BACnet® TCP/IP interface	○	○
Software updates via USB key	●	●
Update with transferring files via FTP	○	○
Update via ctEra cloud service	○	○
Pack	Business	High Efficiency
Winter Pack (includes: evaporator heater, automatic pump activation with SPDT contact, heater fans mouthpieces, compressor crankcase heater)	○	○
Hot climate pack (includes: plus cooling system electrical panel, solar rays protective barriers for the control cabinet)	○	○
Low temp. pack (includes: EC fans, compressor crankcase heater, evaporator heater)	○	-

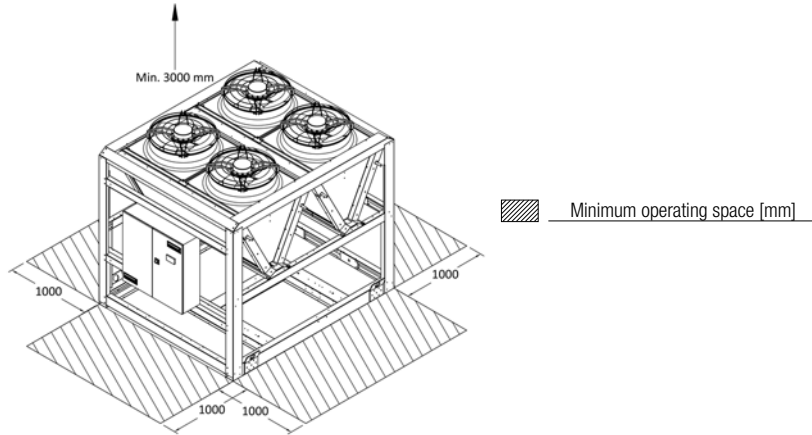
● standard equipment ○ optional - not available

eks/ME

dimensions and operating data

EKS/BS business
090-3-1 ← → 120-3-1

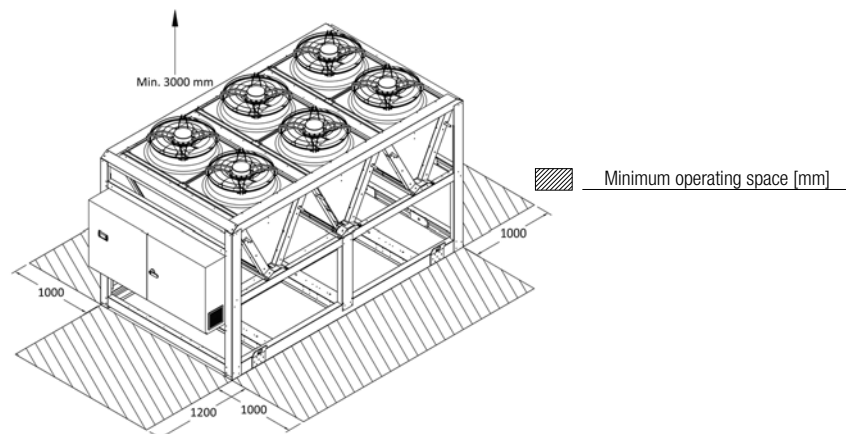
EKS/HE high efficiency
055-2-1HE ← → 070-2-1HE



eks range	eks/BS business				eks/HE high efficiency			
	090-3-1	100-3-1	110-3-1	120-3-1	055-2-1HE	060-2-1HE	070-2-1HE	
Dimensions								
Lenght	mm	2.950			2.950			
Width	mm	2.345			2.345			
Height (ST - LN/SL)	mm	2.465 - 2.525			2.465 - 2.525			
Weights								
BASE unit / BP (brazed plates evaporator)	Kg	1.760	1.770	1.790	1.800	1.570	1.590	1.610
BASE unit / BS (shell & tubes evaporator)	Kg	1.840	1.850	1.860	1.880	1.650	1.670	1.680
INTEGRATED unit / IP (brazed plates evaporator)	Kg	1.900	1.910	1.930	1.940	1.700	1.720	1.740
INTEGRATED unit / IS (shell & tubes evaporator)	Kg	1.980	1.990	2.000	2.020	1.780	1.800	1.810
BASE unit / BP (brazed plates evaporator) / Low Noise	Kg	1.840	1.850	1.870	1.880	1.650	1.670	1.690
BASE unit / BS (shell & tubes evaporator) / Low Noise	Kg	1.920	1.930	1.940	1.960	1.730	1.750	1.760
INTEGRATED unit / IP (brazed plates evaporator) / Low Noise	Kg	2.120	2.130	2.150	2.160	1.910	1.930	1.950
INTEGRATED unit / IS (shell & tubes evaporator) / Low Noise	Kg	2.200	2.210	2.220	2.240	1.990	2.010	2.020

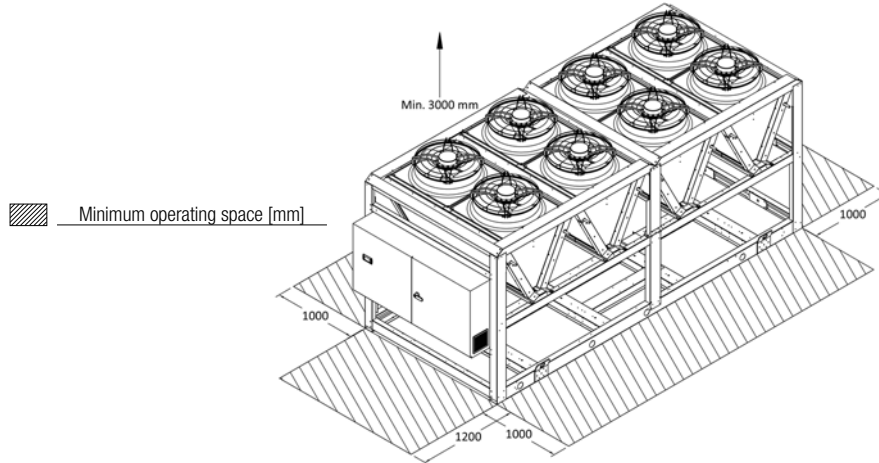
EKS/BS business
120-4-2 ← → 180-6-2

EKS/HE high efficiency
080-4-2HE ← → 100-4-2HE



eks range	eks/BS business				eks/HE high efficiency			
	120-4-2	140-4-2	160-4-2	180-6-2	080-4-2HE	090-4-2HE	100-4-2HE	
Dimensions								
Lenght	mm	4.300			4.300			
Width	mm	2.345			2.345			
Height (ST - LN/SL)	mm	2.465 - 2.525			2.465 - 2.525			
Weights								
BASE unit / BP (brazed plates evaporator)	Kg	2.020	2.620	2.660	2.970	2.450	2.490	2.550
BASE unit / BS (shell & tubes evaporator)	Kg	2.120	2.710	2.740	3.050	2.220	2.280	2.300
INTEGRATED unit / IP (brazed plates evaporator)	Kg	2.200	2.830	2.870	3.180	2.650	2.720	2.760
INTEGRATED unit / IS (shell & tubes evaporator)	Kg	2.290	2.920	2.950	3.260	2.390	2.470	2.480
BASE unit / BP (brazed plates evaporator) / Low Noise	Kg	2.180	2.780	2.820	3.130	2.530	2.650	2.710
BASE unit / BS (shell & tubes evaporator) / Low Noise	Kg	2.280	2.870	2.900	3.210	2.300	2.440	2.460
INTEGRATED unit / IP (brazed plates evaporator) / Low Noise	Kg	2.530	3.200	3.240	3.550	2.910	3.080	3.120
INTEGRATED unit / IS (shell & tubes evaporator) / Low Noise	Kg	2.630	3.290	3.320	3.630	2.630	2.820	2.820

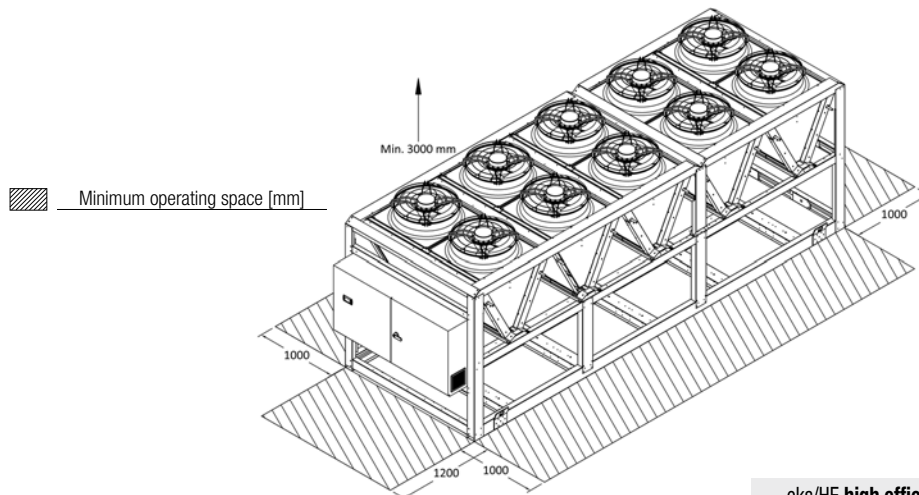
dimensions and operating data



EKS/BS business
200-6-2 ↔ 240-6-2

EKS/HE high efficiency
110-4-2HE ↔ 140-4-2HE

eks range	eks/BS business			eks/HE high efficiency			
	200-6-2	220-6-2	240-6-2	110-4-2HE	120-4-2HE	140-4-2HE	
Dimensions							
Lenght	mm	5.550			5.550		
Width	mm	2.345			2.345		
Height (ST - LN/SL)	mm	2.465 - 2.525			2.465 - 2.525		
Weights							
BASE unit / BP (brazed plates evaporator)	Kg	3.420	3.450	3.470	3.020	3.050	3.080
BASE unit / BS (shell & tubes evaporator)	Kg	3.530	3.560	3.590	2.730	2.750	2.820
INTEGRATED unit / IP (brazed plates evaporator)	Kg	3.650	3.670	3.700	3.260	3.270	3.290
INTEGRATED unit / IS (shell & tubes evaporator)	Kg	3.760	3.790	3.810	2.940	2.940	3.010
BASE unit / BP (brazed plates evaporator) / Low Noise	Kg	3.580	3.610	3.630	3.180	3.210	3.240
BASE unit / BS (shell & tubes evaporator) / Low Noise	Kg	3.690	3.720	3.750	2.890	2.910	2.980
INTEGRATED unit / IP (brazed plates evaporator) / Low Noise	Kg	4.030	4.060	4.080	3.660	3.650	3.650
INTEGRATED unit / IS (shell & tubes evaporator) / Low Noise	Kg	4.140	4.170	4.200	3.310	3.300	3.350



EKS/HE high efficiency
160-4-2HE ↔ 180-6-2HE

eks range	eks/HE high efficiency		
	160-4-2HE	180-6-2HE	
Dimensions			
Lenght	mm	6.800	
Width	mm	2.345	
Height (ST - LN/SL)	mm	2.465 - 2.525	
Weights			
BASE unit / BP (brazed plates evaporator)	Kg	3.600	3.910
BASE unit / BS (shell & tubes evaporator)	Kg	3.340	3.310
INTEGRATED unit / IP (brazed plates evaporator)	Kg	3.830	4.170
INTEGRATED unit / IS (shell & tubes evaporator)	Kg	3.560	3.520
BASE unit / BP (brazed plates evaporator) / Low Noise	Kg	3.760	4.070
BASE unit / BS (shell & tubes evaporator) / Low Noise	Kg	3.500	3.470
INTEGRATED unit / IP (brazed plates evaporator) / Low Noise	Kg	4.230	4.580
INTEGRATED unit / IS (shell & tubes evaporator) / Low Noise	Kg	3.930	3.890